

COMMENT ON D. 1-68-52, "INITIAL PROGRAM CAPACITY AT NAL,"
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In a memorandum titled as above, Sanford has estimated the number of counter and bubble-chamber beams necessary to accommodate the expected number of users at NAL. To do this, he estimated the probable number of counter groups at turn-on (120) and also of bubble-chamber groups (90). From current experience, he supposed that one counter beam would support 3 groups, a bubble-chamber beam 9. He then estimated the number of counter beams available at other accelerators as 27, of bubble-chamber beams 8, and from this derived the number of counter beams required at NAL as 13 (from $13 = 120/3 - 27$), and of bubble-chamber beams as 2 ($= 90/9 - 8$).

Without at the moment questioning the actual value of the numbers used, it is interesting to put in estimates of the errors in each of the quantities involved, in order to ascertain how much weight should be given the final estimate. It seems unlikely that anyone would suppose that the estimate of any of the numbers involved has an error less than 10%. If we use this value for each number, we find:

$$\text{Number of counter beams} = (120 \pm 12)/(3 \pm 0.3) - (27 \pm 3) = 13 \pm 7;$$

and

Number of bubble-chamber beams = $(90 \pm 9)/(9 \pm 0.9) - (8 \pm 1) = 2 \pm 1.7$,
once again showing the difficulty of measuring small differences between
large numbers.